ECE 231S Introductory Electronics
Course Outline

This course is an introduction to electronic circuits using operational amplifiers, diodes, and transistors. The course is the third of the three-course sequence, ECE110-ECE212-ECE231, designed to provide ECE students with a foundation for circuit analysis and electronics.

1. Instructors

Section	Instructor	Office	Email
LEC01	Antonio Liscidini	BA5114	liscidin@eecg.utoronto.ca
LEC02	Olivier Trescases (course coordinator)	SF1020A	olivier.trescases@utoronto.ca
LEC03	Belinda Wang	GB250	belinda.wang@utoronto.ca

2. Text Book

Microelectronic Circuits, **7th Edition**, A. S. Sedra and K.C. Smith, Oxford University Press, 2014.
The course covers the first seven chapters (Part I):
- Chapter 1: Basic circuit concepts (voltage amplifiers, frequency response, Bode plots)
- Chapter 2: Operational Amplifiers
- Chapter 3: Introduction to Semiconductor Physics
- Chapter 4: Diodes
- Chapter 5: Field-Effect Transistors (MOSFETs)
- Chapter 6: Bipolar Junction Transistors (BJTs)
- Chapter 7: Transistor Amplifiers

3. Marking Scheme

Final Exam	45%
Quiz	10%
Labs (5, 3% each)	15%
Midterm Test	30%
Total	**100%**

4. Tutorials

Tutorials are two hours long and held weekly starting from the week of Jan.12th. The first hour is dedicated for review and important sample problems will be taken up on the board. During the second hour students will discuss and solve problems in small groups under the guidance of a TA. The problems discussed will be taken from previous tests or exams. In general, these past test problems will only be available in the tutorial and will not be posted online.

5. Midterm and Quizzes

There is one midterm exam (Thu. Feb. 26th) and one quiz held during the regular tutorial, during the week of March 23rd.

6. Circuit Simulation

SPICE simulation is an integral part of electronic circuit verification. Students will use NI Multisim throughout the course. An activation code will be distributed in the lectures. The installation package is available at: www.ni.com/gate/gb/GB_ACADEMICEVALMULTISIM/US

Unfortunately Multisim is only available for the Windows environment, however Mac/Linux are encouraged to download the free VirtualBox package:
www.oracle.com/technetwork/server-storage/virtualbox/downloads/index.html#vbox

Alternatively, all students are free to use the cross-platform LTSpice simulator, however it is not officially supported by the course staff:
www.linear.com/designtools/software/

7. Labs

There are 5 laboratory experiments and one simulation lab. These labs give students experience with circuit simulation, and with the design and debugging of practical electronic circuits. Students work in teams of two.

Lab Sign-up and Simulation Training Session: Prior to the first lab experiment, students <u>must</u> attend a Lab Signup Session where students will sign-up in teams and have an introductory tutorial on using the circuit simulation software package, Multisim. The sign-up will occur during the first lab session.

Section	Date	Time	Location
PRA06	M. Jan 12	3pm	GB341
PRA02	T. Jan 13	9am	GB341
PRA04	T. Jan 13	3pm	GB341
PRA05	M. Jan 19	3pm	GB341
PRA01	T. Jan 20	9am	GB341
PRA03	T. Jan 20	3pm	GB341

- You can find a lab partner at the time of the lab information session.
- Each student must keep a bound lab book to document their work in order to receive full marks.
- Lab handouts will be posted on the course website and include a preparation component that must be completed prior to the lab session.

Updated Jan. 5, 2015

8. Course Website

The course website is accessible through the main UofT portal**, portal.utoronto.ca
Under your "My Courses" tab, you should see the link:
   Winter-2015-ECE231H1-S-LEC0101.LEC0102.LEC0103.LE: Intro. Electronics

- All the official course announcements, handouts, and other information are posted on the blackboard site.

Discussion Board on CoursePeer:

We will use CoursePeer, www.coursepeer.com, for our discussion board. Our goal is to encourage active discussion amongst students: do not simply wait for an answer from your TA or instructor – please take part in answering questions. We will actively monitor the discussion and provide feedback. To enroll in the coursepeer site, follow this link:
http://crspr.com/?scid=1&rid=50833

9. Homework

- Homework for each section is provided in the Course Syllabus (NOTE: Homework '**exercises'** are found within each section in the chapter, whereas homework '**problems'** are found at the end of the chapter.)
- Questions relating to the homework should be posted on the discussion board or brought up during tutorials.

Have a Question?

In general, questions relating to the course material, labs, and homework should be posted on the discussion board so that everyone can benefit from the answer. Email correspondence should be limited to administrative issues such as handling a missed quiz or lab, etc. Emails should be sent to ta231@eecg.utoronto.ca, an email alias that includes both instructors and TAs who can respond to issues concerning the labs and tutorials.

Updated Jan. 5, 2015